

REMARKS

This amendment is responsive to the Office Actions of July 21, 2006. Reconsideration and allowance of claims 2-14 are requested.

The Office Action

Claims 1, 2, 5, 6, 8, and 9 stand rejected under 35 U.S.C. § 102 as being anticipated by one or more of Vrijheid (US 6,496,006, WO 00/77926 or US 2002/0095084, WO 02/42790) or Gilderdale (US 6,453,189) or Duerr (US 5,294,886)

Claims 3 and 4 stand rejected under 35 U.S.C. § 102 as being anticipated by Gilderdale.

Claim 10 stands rejected under 35 U.S.C. § 102 as being anticipated by Gilderdale or Duerr.

Claim 11 stands rejected under 35 U.S.C. § 102 as being anticipated by Gilderdale or Vrijheid ('084).

The References of Record

In **Vrijheid** '006 and '926, a supply conductor **66** includes inductive elements **74** between segments **72**. The inductive elements provide a DC path, but block RF signals. The inductances **74** are wound with an inductance to provide frequency blocking/passing at selected frequencies. In Vrijheid '058 and '790, a similar construction is provided in a catheter **17**.

Duerr provides decoupling elements **10** in the form of inductances along a feeder **9**.

Thus, none of Vrijheid and Duerr disclose segments of a conductor separated by transformers.

The Examiner references paragraph 3, lines 14-20 of **Gilderdale** as disclosing a "transformer". The applicants ask that the Examiner compare the description in this paragraph to the definition found in the McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition, (2003) of **quarter-wave transformer**:

quarter-wave transformer [ELECTROMAG] A section of transmission line approximately one quarter-wavelength long, used for

matching a transmission line to an antenna or load. Also known as quarter-wave matching section.

It is submitted that column 3, lines 14-20 of Gilderdale are describing a length of quarter-wavelength coaxial transmission line and not a "transformer" in the sense of a transformer that has primary and secondary windings across which AC currents are passed but through which DC currents are blocked.

**The Claims Distinguish Patentably
Over the References of Record**

Claim 3 calls for a lead having a multiplicity of segments and a plurality of transformers. Each transformer has a first winding connected with the wires of one of the segments and another winding connected with the wires of an adjacent segment. It is submitted that the so called "folded-back balancing transformer" described at column 3, lines 14-20 of Gilderdale does not teach or fairly suggest a transformer having a winding in each of two segments for inductively coupling the two segments. Accordingly, it is submitted that **claim 3 and claims 2, 6, 7, 8, 10, and 11 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 4 calls for a toroidal transformer. It is submitted that there is no suggestion in Gilderdale of a toroidal transformer, much less a toroidal transformer with primary and secondary windings on a toroid. Accordingly, it is submitted that **claim 4 and claims 9 and 13 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 5 has been rewritten to set forth a connection lead including a plurality of lead segment loops. Inductive coupling loops couple adjacent pairs of the lead segment loops. Such a configuration is not suggested or fairly taught by any of the references of record. The Examiner is invited to trace the winding pattern of the inductive elements **23, 74** of Vrijheid. It will be noted that the same two wires extend the length of the illustrated conductor, which two wires wrap in a spiral on the former **24, 76**. In Duerr, the coaxial cable **9** is again continuous, but wraps in a spiral or other loop pattern in the decoupling element **10**. The references of record fail to teach or fairly suggest conductor segments in the form of loops inductively connected by a

series of other coupling loops. Accordingly, it is submitted that **claim 5 and claims 12 and 14 dependent therefrom** distinguish patentably and unobviously over the references of record.

The Drawings

The specification has been amended to correct the typographical errors noted by the Examiner in the objections to the drawings and specification. It is submitted that this obviates the Examiner's objections regarding Figures 3 and 4.

The applicants enclose a replacement sheet 3 of the drawings, which has added reference indicators "T", "141", and "142".

Regarding Figure 8, page 9, line 9 referenced by the Examiner describes the transformer as having "the form of a known T equivalent circuit". As used on page 9, "T" is not used as a reference numeral and need not be added to Figure 8.

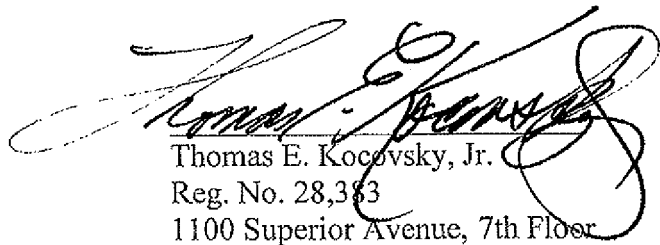
CONCLUSION

For the reasons set forth above, it is submitted that claims 2-14 distinguish patentably over the references of record and meet all statutory requirements. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

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quarter [NAV ARCH] Portions of a vessel's sides about midway between the stem and the middle and between the middle and the stern. { 'kwɔrd-ər }

quarter deck [NAV ARCH] The after portion of a weather deck. { 'kwɔrd-ər ,dek }

quartering machine [MECH ENG] A machine that bores parallel holes simultaneously in such a way that the center lines of adjacent holes are 90° apart. { 'kwɔrd-ə-rɪŋ mə,ʃɪn }

quartering sea [NAV] Waves moving in a direction approximately 45° from a vessel's heading, striking the vessel on the quarter. { 'kwɔrd-ə-rɪŋ 'si: }

quaternary phase-shift keying [ELECTR] Modulation of a radio wave carrier with two parallel streams of nonreturn-to-zero data in such a way that the data is transmitted as 90° phase shifts of the carrier; this gives twice the message channel capacity of binary phase-shift keying in the same bandwidth. { 'kwɔrt-ə-ner-ə 'fæz ,ʃɪft ,kɛ-ɪŋ }

quaternary phase See two-phase. { 'kwɔrd-ər ,fæz }

quaternary polymer [CHEM] A polymer in which the repeating groups comprise four species of monomer. { 'kwɔrd-ər ,pɒl-ɪ-mər }

quarter-sawn [MATER] The grain pattern that is produced when hardwood is cut so that the annular rings are at an angle of 45° or less with the board's surface. { 'kwɔrd-ər ,sɔd }

quarter-square multiplier [COMPUT SCI] A device used to carry out function multiplication in an analog computer by implementing the algebraic identity $xy = \frac{1}{4}[(x+y)^2 - (x-y)^2]$. { 'kwɔrd-ər ,skwər 'mal-tɪ-pla-ɪ-ər }

quarter-turn drive [MECH ENG] A belt drive connecting pulleys whose axes are at right angles. { 'kwɔrd-ər ,tɜrn 'drɪv }

quarter-wave [ELECTROMAG] Having an electrical length of one-quarter-wavelength. { 'kwɔrd-ər ,wæv }

quarter-wave antenna [ELECTROMAG] An antenna whose electrical length is equal to one-quarter-wavelength of the signal to be transmitted or received. { 'kwɔrd-ər ,wæv an'ten-ə }

quarter-wave attenuator [ELECTROMAG] Arrangement of two wire gratings, spaced an odd number of quarter-wavelengths apart in a waveguide, used to attenuate waves traveling through in one direction. { 'kwɔrd-ər ,wæv ə'ten-yə ,wɔd-ər }

quarter-wave line See quarter-wave stub. { 'kwɔrd-ər ,wæv ,lɪn }

quarter-wave matching section See quarter-wave transformer. { 'kwɔrd-ər ,wæv 'mætʃ-ɪŋ ,sek-ʃən }

quarter-wave plate [OPTICS] A thin sheet of mica or other doubly refracting crystal material of such thickness as to introduce a phase difference of one quarter-cycle between the ordinary and the extraordinary components of light passing through; such a plate converts circularly polarized light into plane-polarized light. { 'kwɔrd-ər ,wæv ,plæt }

quarter-wave stub [ELECTROMAG] A section of transmission line that is one-quarter-wavelength long at the fundamental frequency being transmitted; when shorted at the far end, it has a high impedance at the fundamental frequency and all odd harmonics, and a low impedance for all even harmonics. Also known as quarter-wave line; quarter-wave transmission line. { 'kwɔrd-ər ,wæv ,stʌb }

quarter-wave termination [ELECTROMAG] Metal plate and a wire grating spaced about one-fourth of a wavelength apart in a waveguide, with the plate serving as the termination of the guide; waves reflected from the metal plate are canceled by waves reflected from the grating so that all energy is absorbed (none is reflected) by the quarter-wave termination. { 'kwɔrd-ər ,wæv tər-mə'nɪ-shən }

quarter-wave transformer [ELECTROMAG] A section of transmission line approximately one-quarter-wavelength long, used for matching a transmission line to an antenna or load. Also known as quarter-wave matching section. { 'kwɔrd-ər ,wæv tranz'fɔrm-ər }

quarter-wave transmission line See quarter-wave stub. { 'kwɔrd-ər ,wæv tranz'mɪʃən ,lɪn }

quartic See biquadratic. { 'kwɔrd-ɪk }

quartic equation [MATH] Any fourth-degree polynomial equation. Also known as biquadratic equation. { 'kwɔrd-ɪk 'kwɔrt-ɪ-ən }

quartic quantile [MATH] A quantile of the fourth degree. { 'kwɔrt-ɪk 'kwɔnt-ɪ-əl }

quartic surd [MATH] A fourth root of a rational number that is itself an irrational number. { 'kwɔrd-ɪk ,sɜrd }

quartile [STAT] The value of any of the three random variables which separate the frequency of a distribution into four equal parts. { 'kwɔrt-ɪl }

quartile deviation [STAT] One-half of the difference between the upper and lower, that is, the third and first, quartiles. Also known as semi-interquartile range. { 'kwɔrt-ɪl ,dɛ-ve'i-ʃən }

quartz [MINERAL] SiO₂ A colorless, transparent rock-forming mineral with vitreous luster, crystallizing in the trigonal trapezohedral class of the rhombohedral subsystem; hardness is 7 on Mohs scale, and specific gravity is 2.65; the most abundant and widespread of all minerals. { 'kwɔrts }

quartzarenite [PETR] A quartz-rich sandstone with framework grains separated predominantly by cement rather than matrix; essentially an orthoquartzite. { 'kwɔrt-ə-rɪt ,nɪt }

quartz basalt [PETR] An igneous rock with more than 5% quartz. { 'kwɔrts bə'sɔlt }

quartz-bearing diorite See quartz diorite. { 'kwɔrts ,ber-ɪŋ 'dɪ-ə-rɪt }

quartz claim [MIN ENG] In the United States, a mining claim containing ore in veins or lodes, as contrasted with placer claims carrying mineral, usually gold, in alluvium. { 'kwɔrts 'klæm }

quartz clock [HOROL] A clock using the piezoelectric property of a quartz crystal, in which the crystal is introduced into an oscillating electric circuit having a frequency nearly equal to the natural frequency of vibration of the crystal. { 'kwɔrts 'klɒk }

quartz crystal [ELECTR] A natural or artificially grown piezoelectric crystal composed of silicon dioxide, from which thin slabs or plates are carefully cut and ground to serve as a crystal plate. [MINERAL] See rock crystal. { 'kwɔrts 'krɪst-əl }

quartz-crystal filter [ELECTR] A filter which utilizes a quartz crystal; it has a small bandwidth, a high rate of cutoff, and a higher unloaded Q than can be obtained in an ordinary resonator. { 'kwɔrts ,krɪst-əl 'fɪl-tər }

quartz-crystal resonator [ELECTR] A quartz plate whose natural frequency of vibration is used to control the frequency of an oscillator. Also known as quartz resonator. { 'kwɔrts ,krɪst-əl 'rez-ən-əd-ər }

quartz delay line [ELECTR] An acoustic delay line in which quartz is used as the medium of sound transmission. { 'kwɔrts dɪ'leɪ ,lɪn }

quartz diorite [PETR] A group of plutonic rocks having the composition of diorite but with large amounts of quartz (greater than 20%). Also known as quartz-bearing diorite; tonalite. { 'kwɔrts 'dɪ-ə-rɪt }

quartz fiber [ENG] An extremely fine and uniform quartz filament that may be used as a torsion thread or as an indicator in an electrostatic or dosimeter. { 'kwɔrts 'fɪ-bər }

quartz-fiber dosimeter [ENG] A dosimeter in which radiation dose is determined from the deflection of a quartz fiber that is initially charged, repelling it from its metal support, and has its charge reduced by ionizing radiation, causing a proportional reduction in its deflection. { 'kwɔrts 'fɪ-bər dɒ'sɪm-əd-ər }

quartz-fiber electrostatic [ELECTR] Electrostatic in which a gold-plated quartz fiber serves the same function as the gold leaf of a conventional electrostatic. { 'kwɔrts 'fɪ-bər i'lek-trə-stəp }

quartz-fiber manometer See decrement gage. { 'kwɔrts 'fɪ-bər mən-ə-mɛt-ər }

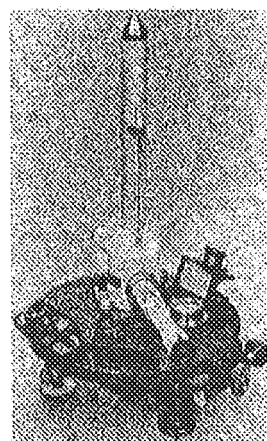
quartz-flooded limestone [PETR] A limestone characterized by an abundance of quartz particles that had been imported suddenly from a nearby source by wind or water currents, but that gradually become sparser in an upward direction and completely disappear within a few centimeters. { 'kwɔrts ,fləd-əd 'lɪm-stən }

quartz graywacke [PETR] A graywacke containing abundant grains of quartz and chert and less than 10% each of feldspars and rock fragments. { 'kwɔrts 'grɔ,wæk-ə }

quartz horizontal magnetometer [ENG] A type of relative magnetometer used as a geomagnetic field instrument and as an observatory instrument for routine calibration of recording equipment. { 'kwɔrts ,hɒr-ə-zɪnt-əl ,magn-ə'tɪm-əd-ər }

quartz-iodine lamp [ELECTR] An electric lamp having a tungsten filament and a quartz envelope filled with iodine vapor. { 'kwɔrts 'i-ə,dɪn ,læmp }

QUARTZ HORIZONTAL MAGNETOMETER



Photograph of quartz horizontal magnetometer (U. S. Coastal and Geodetic Survey)